TEMPORARY HOUSING AND CARE FOR LIVESTOCK AND POULTRY

MONOGRAPH No. 003

NEBRASKA DEPARTMENT OF AGRICULTURE
AGRICULTURAL EMERGENCY RESPONSE ACTIONS
LIVESTOCK DISEASE EMERGENCY

INITIAL ISSUE

August 1, 2005

TABLE OF CONTENTS

1.0 SCOPE AND APPLICATION

The purpose of this monograph is to provide functional guidance about the establishment, operation, and maintenance of temporary livestock and poultry housing and care. Generally, these activities will be associated with livestock or poultry quarantine, an "animal stop-movement order" issued by the Governor, or any other circumstance that places livestock or poultry in the temporary care of a county. Local emergency management should use this monograph as a template or reference to develop an operational plan for providing temporary livestock and poultry housing and care. Operational plans must be consistent with the Local Emergency Operations Plan (LEOP). Several sections of this monograph contain general descriptions of the scope of operations necessary to implement a particular component of the temporary housing and care of animals. In most cases, these sections were made general so local emergency planners could insert or reference more detailed, county-specific operational details. Examples of these sections include Health and Safety, Communication and Public Information.

This monograph is intended to apply to livestock and poultry. It is important for Emergency Managers to review the surrounding livestock and poultry production, and also the types of animals transported on roads through the county. Based on this review, Emergency Managers should identify the likely species of animals the county could become responsible for on a temporary basis. The operational plan for the temporary housing and care of livestock and poultry will be highly dependant on the species of animals that could be temporarily stopped in a county.

2.0 SUMMARY OF PROCEDURES

This monograph presents the operational considerations and details associated with establishment, operation and maintenance of temporary livestock and poultry housing facilities.

Emergency Managers must remember that several considerations must be evaluated as plans are developed to temporarily house and care for animals. First, planners must remember they will likely need to deal with animals that are not believed to be infected and those that are potentially infected. Wherever possible, these categories of animals should be segregated to reduce the potential to spread an infectious disease. Segregation of herds or flocks by the animal owner also will help with tracking their health and veterinary care provided by the county, and lessens the chance that animals, unfamiliar with each other, will fight and injure each other. Finally, in most cases, different species and animals in different phases of production should not be housed together. This prevents intra-species aggression and injury and allows caregivers to deliver and track species and production-phase specific care.

2.1 Temporary Housing Locations for Livestock and Poultry

Local emergency planners should identify appropriate locations for temporary housing before the need arises. Publicly-owned lands may be easier to use for this purpose. Wherever possible, the Emergency Managers should strive to develop written access and use agreements with the landowners of the proposed areas. The number of temporary locations needed is dependent on the flow of animals being transported through the county and the number of different species involved. **When choosing suitable locations, it should be remembered that temporary housing durations can be as short as a few hours to as long as several weeks.**

Possible areas for both potentially infected and non-infected livestock and poultry should be identified. The greater the likelihood animals are infected the more isolated the temporary housing facilities should be. Local or state veterinarians can assist emergency planners in determining acceptable ranges of isolation distances or setbacks for these areas. These distances

will be dependant upon both the specific disease agent, species affected, and weather conditions. Generally, the worst case scenarios should be applied to the planning process. In addition, thought should be given to the use of a temporary holding area as a mortality disposal site if the temporarily housed animals must be euthanized.

Ideal temporary housing and care areas would include the infrastructure necessary to house (isolate and shelter), feed and water, and manage wastes associated with the species in question. These sites should provide access for feed and water delivery to the animal housing areas. The sites should be easy to secure, protecting the community from animals wandering off, and protecting the animals from human visitors and scavengers. In addition, these sites should provide adequate area to store livestock or poultry transport vehicles during the emergency.

Possible sites might include: fairgrounds, abandoned or empty feedlots, abandoned or empty confinement buildings, airports, airplane hangers, conservation reserve program land (with a special-use exemption), livestock auction markets, and fenced pasture. Where the appropriate infrastructure does not exist, emergency planners should identify the supplies and suppliers of the equipment necessary to house (isolate and shelter), feed and water the animals, as well as manage wastes associated with the species in question. (See Section 2.2.2 *Equipment.*)

2.2 Housing and Caring for Livestock and Poultry

The temporary housing and care of livestock and poultry involves two distinct activities: (1) unloading and loading animals, and (2) housing and caring for animals. These activities should be carried out in light of proper decontamination and disinfection. (See Monograph No. 004 *Decontamination and Disinfection.*)

Unloading and Loading Livestock

Personnel involved in poultry or livestock handling must be thoroughly trained in all aspects of animal handling and care. These skills will be necessary to effectively carry out the tasks

required of them. Animal well-being must be maintained during the unloading and loading process.

Generally, poultry will be unloaded from their transport truck by manually or mechanically carrying their transport coops to the temporary housing area. Records of the initial stocking density of each area should be documented. Once in the area, the coops should be opened and the birds will be released into the housing area. The coops should be stored either back on the trucks or on some other portion of the area. Care should be taken to ensure that poultry from different flocks are not mixed. Decontamination and disinfection of the transport equipment may be necessary prior to it leaving the site. (See Monograph No. 004 *Decontamination and Disinfection.*)

When it is time to reload the birds onto the trucks, the coops will need to be brought into the housing areas, and the birds will be manually caught and placed into the coops. Coops should be loaded so there is room for each bird to sit without sitting on another bird. Poultry should have feed and water available to them until the catch begins.

Under the direction of the responding lead veterinarian and possibly in cooperation with the owner(s) of the poultry or their representative(s), personnel in charge of caring for the poultry should go through the temporary housing area just before loading in order to cull any unfit birds. Unfit birds are ones that are lame or sick and probably would not survive the catch and transport. Birds, which are visibly unfit before loading, must not be transported but instead immediately euthanized. Cervical dislocation is the suggested method of euthanization. All feeders, drinkers, and other obstacles must be raised or removed from the housing area prior to catching to minimize the risk of bruising. Careful documentation of identity and numbers of birds euthanized and the method and place of disposal should be kept. (See section 2.6 of this monograph.)

Catching should take place in low lighting to minimize fear reactions in the birds. Poultry should be caught individually by grasping one or two legs, just above the feet. Care should be

exercised to ensure birds can be held comfortably without distress or injury, and carrying distances should be kept to a minimum. No more than five birds should be carried in one hand. (National Chicken Council, 2003.)

Livestock will generally arrive in some type of trailer. These trailers will need to be directed to a loading ramp constructed on the edge of the temporary housing area. This loading ramp will need to be adjustable in height since it is likely that a variety of trailers will be unloading at the area. The ramp should not be steeper than 20 degrees, or it may cause animals to slip. (American Meat Institute, 2003.) Ramps should be fitted with some type of non-slip surface, such as cleating or grooving. The ramp should lead into an alleyway with holding pens situated along its sides. As animals are off-loaded, they can be directed into the appropriate holding pen. The number, species, and condition of the animals that are unloaded should be documented. If possible, holding pens should be loaded to a capacity where the animals still can lie down without being on top of each other. Animals from different herds should not be mixed, animals from different production phases should not be mixed, and different species should not be mixed in a pen. The use of electric prods should be discouraged; instead, non-electric devices such as streamers on a stick or some type of rattle can be a functional alternative. The animals' transport trailers should be stored at the temporary housing and care site. Decontamination and disinfection of the transport equipment may be necessary prior to it leaving the site. (See Monograph No. 004 *Decontamination and Disinfection.*) When it is time to remove the animals, the unloading process is reversed.

Housing and Care of Livestock and Poultry

Temporary housing areas should contain the animals, shelter them from weather extremes, isolate them from scavengers and wild animals, provide adequate ventilation, and allow for manure and urine to be removed. These housing areas must also be fitted with appropriate feeders and waterers. In addition, an animal housing facility should provide separate housing for sick animals or those requiring veterinary care.

As emergency planners prepare a temporary housing and care for livestock and poultry plan, they should confer with local veterinarians, producer organizations, or cooperative extension specialists to obtain plans for providing poultry or livestock housing on a temporary basis. In addition, planners should make allowances in their planning for the various phases of livestock or poultry production that they are likely to encounter. Again, it should be remembered that **temporary housing durations can be as short as a few hours to as long as several weeks.**

Generally, livestock can be housed in pens, either outside or inside buildings. Poultry, should be separately housed or penned in order to maintain ownership identity. Careful documentation of ownership identity and numbers should be maintained. (See section 2.6 of this monograph.) Chickens will especially need complete containment, such as would be provided by a building or airplane hangar.

2.2.1 Personnel

Personnel working at these temporary housing and care areas should have relevant experience with livestock and poultry care and handling. These workers should understand animal behavior and common animal illnesses or injuries in order to provide adequate care. Personnel with the above "relevant experience" should be pre-selected if possible. The county attorney should evaluate the volunteers' liability relative to assisting the county in the response to a livestock or poultry emergency. Every effort should be made to limit or remove associated liabilities for volunteers. In some cases, local producers may be able to supply personnel.

Two concepts that strongly influence livestock behavior are the *flight zone* and the *point of balance*. The *flight zone* is similar to what humans call "personal space." If someone you are not familiar with enters your personal space, you will become uncomfortable and probably move away from them. Likewise, if you enter an animal's *flight zone*, the animal will move away until it feels safe. If you stop moving into or retreat from the *flight zone*, the animal usually stops moving away. The size of an animal's *flight zone* is shaped by the following: breed or species

type, sounds and visual cues, an animal's wildness or tameness, and by the animal's recent experiences (especially with humans).

The *point of balance* is directly related to an animal's *flight zone*. The *point of balance* can vary from species to species, but is generally near an animal's shoulder. It determines the direction the animal is likely to move when their *flight zone* is penetrated. If you approach an animal from in front of its *point of balance*, it will move backward. Approaching from behind the point makes the animal move forward.

Personnel working at a temporary livestock or poultry housing and care area should be familiar with the *point of balance* and *flight zone* concepts, and the following tips to prevent unwanted impact on animal behavior:

- Livestock and poultry are generally sensitive to rapid and unexpected movements. Rapid or unexpected movement can cause animals to become agitated and excited, in some cases to the point of creating a health concern or causing them to injure themselves or even response personnel. Response personnel must remember to move slowly, steadily, and to avoid abrupt or sudden motions.

- Most species of livestock and poultry are at least partially colorblind and have poor depth perception, making them extremely sensitive to contrasts. A shadow across a walkway may look like a deep hole to the animal. This is why animals often hesitate (balk) when passing through unfamiliar gates, barn door openings, or chutes.

- Many species of livestock may have difficulty moving from dark places to brightly lit places, and vice versa. If moving animals through changing light levels, allow them time to adjust to new light levels before moving them forward. Rushing them may cause them to balk.

- Most species of livestock have good hearing and will try to move away from the source of unfamiliar or unpleasant noise.

- Animals draw on past experiences when reacting to a situation, so animals that have been chased, slapped, kicked, hit, or mistreated will have a sense of fear around humans. These animals will have a large *flight zone*.

Personnel will be assigned to work at these temporary housing and care areas for shifts with lengths determined by the Planning Staff. In most cases, these workers will need to be provided food, water, and sanitary facilities.

The response team involved with the temporary housing and care of livestock and poultry should also be assigned at least one supporting veterinarian. This veterinarian will be responsible for providing medical care to sick animals and ensuring biosecurity for the temporarily housed animals. Contact information for this veterinarian should be provided to each team assigned to work a temporary livestock or poultry housing and care area.

2.2.2 Equipment

The following list of equipment may be needed to establish a temporary livestock or poultry housing and care facility:

- Livestock housing: portable squeeze chutes; livestock panels; portable fencing; species appropriate feeders (wet/dry, trough, bunks, etc.); species appropriate waterers (nipple, trough, tanks, etc.); ramps; prods (electric or non-electric); hoses; pumps; shade structures or supplemental cooling (fans, sprinklers, misters, etc.); shelter from weather extremes; bedding, manure removal equipment (shovels, scrapers, tractor, etc.); and species specific feed and water.

- Poultry housing: waterers (i.e., can, bell, etc.), water, feeders, feed, grit, bedding, solid wall panels, small mesh chicken wire, and bird netting to cover temporary structures.

- Lighting: Lighting should provide general area illumination for staff working at the temporary housing area. With any lighting system, it will be necessary to provide electricity, either with batteries, generators, or drop service from power lines. The use of a drop service will require coordination with the local power company.

- Communication: Each temporary animal housing and care team should be provided a means of communication with the emergency operation center (EOC). Generally, this will consist of portable radios tied into the EOC's frequency. Selection of radios should consider local topographic and cultural interferences that could negatively impact transmission and reception. If line-of-sight or distance becomes a limiting factor, the use of portable antennas or repeater towers may be necessary. In some cases, pagers, cellular phones, citizen band radios or other devices will be appropriate. Whichever system is

chosen, it must be compatible with other systems used in the Unified Command and must have the bandwidth or capacity to function effectively during an emergency.

- Portable sanitary facilities: Since it is possible these services will be needed over an extended time, a cleaning and pumping schedule will need to be established. (See Monograph 004 *Decontamination and Disinfection* for appropriate cross references.)

2.2.3 Monitoring Animals

The Operations Section will need to develop a schedule for response personnel, charged with the care of these animals, to periodically monitor animals' health and to feed and water the animals. Veterinarians in the Command Staff can work with the Operations Section to determine the frequency of feedings and animal monitoring needed for each species that a county is likely to house. Monitoring to examine the general health and condition of animals should be conducted at least daily. These inspections should be tied to daily feedings and waterings. Any mortalities identified during these inspections should be removed from the animal living areas and disposed of promptly. Potentially infected mortalities should be disposed of on-site, if possible. (See Monograph No. 002 *Mortality Disposal.*) Common disposal methods include burial, composting, rendering, and incineration. The selection of the most appropriate disposal method will depend on available local resources. If sick animals are noticed during the monitoring, response personnel should contact the supporting veterinarian immediately and request assistance.

Careful documentation of ownership identity and numbers of animals euthanized and the method and place of disposal should be kept. (See section 2.6 of this monograph.)

2.3 Biosecurity

Micro-organisms, viruses, and spores associated with the spread of a contagious animal disease (CAD) can spread to non-infected animals in many ways. A general description of common foreign animal diseases (FADs) and possible means of transmission are presented in Table 1, below. Many of the mechanisms for disease spread cannot be controlled by responders (e.g.,

mechanisms associated with weather). Some mechanisms for spread can be directly controlled by responders. These mechanisms involve the spread of a disease through human movement, and the reuse of equipment and vehicle movement. CAD agents can be found in the soil, fodder,

Table 1
Common Foreign Animal Diseases

Disease	Species affected	Transmission	Category of Virus
African Swine Fever	Swine	Ingestion, contact, ticks	A
Influenza (avian, equine, swine)	Birds, horses, swine	Aerosols, ingestion	A
Newcastle Disease	Birds	Aerosols, ingestion	A
Renderpest	Ruminants, cattle	Aerosols, ingestion	A
Peste des Petis	Small ruminants	Aerosols, ingestion	A
Foot-and-Mouth Disease	Cloven hoofed animals	Aerosols, ingestion	B[1]
Swine Vesicular Disease	Swine	Aerosols, ingestion	A
Classical Swine Fever	Swine, ruminants	Contact, ingestion	A
Porcine Respiratory and Reproductive Syndrome (PRRS)	Swine	Contact, aerosols	A

Notes: Modified from Agriculture and Resource Management Council of Australia and New Zealand, 2000. See Monograph No. 004 *Decontamination and Disinfection* for more details.
A Best disinfectants are detergents, hypochlorites, alkalis, Virkon® and gluteraldehyde.
B Best disinfectants are hyporchlorites, alkalis, Virkon®, and gluteraldehyde. Bactericides like quarternary ammonia compounds and phenolics are not effective against these viruses.
1 Acids are effective for foot-and-mouth virus.

manure, feed, bedding, building surfaces, on equipment, on animals, and in the atmosphere at an infected location. Responders can be exposed to and become carriers of the CAD agent by simply being in the atmosphere of the infected location, or by stepping in or otherwise contacting materials or objects that are contaminated. Besides being found in the visible contamination, such as dirty boots or coveralls, the CAD agents can adhere to clothing, hair, and skin if airborne. Biosecurity is a system designed to prevent the spread of disease into a healthy herd or flock and to prevent the spread of disease out from an infected herd or flock.

In order to preserve herd or flock health and prevent the spread of disease, local emergency planners should develop biosecurity guidelines for temporary livestock and poultry housing and care areas. All personnel associated with creating, operating, and maintaining these areas should

be required to conform with the county's biosecurity guidelines. Possible biosecurity guidelines should include the following:

- Workers may be required to wash and disinfect their vehicle or tires prior to entering and leaving the temporary housing and care area. Local veterinarians should be consulted on the need for this level of biosecurity. (See Monograph 004 *Decontamination and Disinfection* for appropriate cross references and details.)

- Workers should be required to sign in and to log in all visitors who enter and leave the temporary housing and care area.

- Workers should be required to maintain a 48-hour animal-free period prior to entering the temporary housing and care area. Visits to state fairs, zoos, and other places where animals are housed must be figured into the animal-free day calculation. In the case of poultry, response personnel must eliminate contact with pet birds (even being in the same house), or other bird gathering areas, such as feeders. Depending on the species involved and the potential risk, these animal-free periods can be modified, especially if unique crews can be assigned to each area.

- Workers should be required to wear clean clothes, typically including coveralls, head covering and boots. (See Monograph 004 *Decontamination and Disinfection* for appropriate cross references and details.)

- The veterinarian in charge may require that workers shower before entering and prior to exiting the temporary housing and care area. If this is done, local emergency planners must plan for the supplies and equipment necessary to provide this option.

- Workers should disinfect portable equipment prior to entering or leaving the temporary housing and care area.

- Workers should not wear jewelry into the temporary housing and care area.

- Workers should work on animals from areas of youngest animals to oldest animals when phases of production are co-located at a temporary housing and care area. Veterinarians should be consulted on this order for the various species considered.

- Workers should utilize boot disinfection solutions provided at the temporary housing and care area.

2.4 Health and Safety

General first aid and access to emergency medical services must be provided at all traffic-control locations that are staffed. This portion of a response would be coordinated by the Safety Officer, a member of the Command Staff supporting the Unified Command.

Personnel working with these livestock or poultry should be provided personal protective equipment (PPE) to minimize their exposure to the animals. This will help provide the necessary biosecurity for the animals. Unless stipulated by the lead responding veterinarian (Command Staff), respiratory protection is probably not necessary. Temporary animal care and housing workers should wear clothing or rain suits, with hoods, that can be disinfected and reused. Rubber gloves and rubber boots also will be needed. These items can be disinfected and reused. Under gloves, cotton or nitrile, should be worn under the outer rubber glove. Dust masks can be worn to protect the workers' mouths, preventing the possible ingestion of splashed materials.

2.5 Communication

Because of the dynamic nature of an emergency response to a CAD, the establishment and maintenance of temporary animal housing and care facilities must be coordinated with the ever-changing understanding of the nature and extent of the disease in question. In order to allow the teams in charge of the temporary housing and care areas to quickly respond to changing field conditions, communication between the teams, and the EOC must be maintained. Real-time communication and pre-shift meetings constitute the required communication needed to support temporary animal housing and care areas.

2.6 Documentation

Throughout the process of providing temporary animal housing and care, it will be necessary to provide various types of documentation. For indemnity payments to the responding agency or other forms of state or federal reimbursement or cost sharing, it will be necessary to document

the resources applied and expended in providing temporary housing and care. These costs can include labor charges, equipment rentals or purchase, costs of expendable equipment or supplies, subcontractor costs, or any other costs associated with providing the temporary housing and care services. Most of this information will be collected and evaluated by the Finance and Administration Section.

Because of the nature of an emergency response, it is critical to identify personnel who will have the responsibility of documenting these issues or monitoring and verifying that the needed documentation is being collected by other parties. In some cases, identifying a specific response job that includes documentation will be preferable, especially if personnel will be rotated through shifts and response jobs. This role and responsibility should be identified and described in a county's LEOP.

Possible actions or items that should be included in a documentation checklist include:

Number of animals in an area
Condition of livestock or poultry
Responder time (hours)
Number of responders
Identity of responders
Mileage to the animal care area
Sanitation services provided
Coordinates of care areas
Feed used
Water provided
Care providers (vet services)
Mortalities and causes
Number of livestock or poultry at a location
Meals provided
Location of each responder
Equipment at each point
Usage time for equipment
Specific quantities of expendables used

Documentation also will be essential to tracking vehicles, heavy equipment, and people who exit and enter the temporary livestock or poultry housing area.

Documentation should be maintained in written form. Video, photographs, and tape-recorded messages can be used to supplement the written documentation. Written documentation can be maintained in a logbook format, using documentation worksheets, or a combination of both. Documentation should be recorded with an ink pen, and any entry errors should have a single line drawn through them with the author's initials and date recorded at one end of the line. If a logbook is used, it should have numbered pages and the spine should be sown, making the removal of pages both difficult and obvious. Pages should never be removed from a logbook.

Anyone making entries in the logbook should sign and date the bottom of each page. If documentation worksheets are used, the author should sign and date the bottom of each worksheet. Sets of logbooks and worksheets should be assigned to each response task (i.e., traffic control, decontamination/disinfection, mortality disposal, etc.) or a master set of logbooks and sheets can be maintained. Logbooks and worksheets should be assigned unique identification numbers. When the logbooks or a group of worksheets is issued from Planning (response related) or Finance/Administration (cost and time reporting related) to a responder, the identification numbers of the logbooks and worksheets should be recorded and the recipient should sign them out in a document tracking log maintained by the issuing Section. This establishes a chain-of-custody for the documentation.

If pictures, video, or taped messages or interviews are used to supplement the written documentation record, the following information should be documented for each picture, video segment or audio-taped message or interview: photographer or interviewer, subject, time, date, person interviewed (video or audio taped), photo and film roll number, direction (pictures and video), and general weather conditions (i.e., temperature, wind direction, humidity, sky condition, etc.).

2.7 Training

Personnel training can be an important component of planning to initiate a temporary animal housing and care plan due to either quarantine, an "animal stop-movement order" issued by the Governor, or other circumstance. Besides the livestock and poultry-handling experience, all personnel associated with the temporary housing would benefit from training in: biosecurity, FAD, the operation and maintenance of the disinfection equipment, disinfection procedures, associated environmental protection issues, and documentation requirements. Cooperative extension personnel, LEDRS veterinarians, and other qualified state and federal employees can provide animal care and handling training to responders. The local fire and emergency medical services personnel can provide training in decontamination and disinfection. In some counties, law enforcement and local public health personnel also can provide decontamination and disinfection training. Local veterinarians can provide training in biosecurity.

2.8 Public Information

Once a livestock or poultry emergency occurs and the county is called upon to provide temporary animal housing and care, the Public Information Officer (PIO) attached to the Command Staff will initiate the county's public information and media plan to inform the local community of the situation. This notification may involve public announcements via radio, television, web site, newspaper, signage announcing the traffic-control points, or any other appropriate mechanisms to inform the public of the county's response to the emergency. Locations of these temporary animal housing and care areas should not be made public. Any information release should be coordinated with state or federal public information agencies. Local responders should identify and make use of any state or federal pre-prepared information or press releases that could be used in responding to a CAD.

In general, response workers should be trained to refer any press or other project-specific inquiries to the public relations offices designated for the response.

REFERENCES

American Meat Institute. 2003. Recommended Animal Handling Guidelines for Meat Packers. AMI Foundation.

Garner, J.P; C. Falcone; P. Wakenell; M. Martin; and J. Mench. 2002. Reliability and Validity of a Modified Gait Scoring System and its Use in Assessing Tibial Dyschondroplasia in Broilers. British Poultry Science, 43:355-363.

National Chicken Council. 2003. Animal Welfare Guidelines and Audit Checklist. Washington, D.C.

Nebraska Department of Environmental Quality. 2004. Catastrophic Animal Mortality Management Plan – Emergency Disposal of Animal Carcasses. Nebraska Department of Environmental Quality Integrated Waste Management Program and Nebraska Department of Agriculture.

Initial materials for this Monograph were furnished by SES, Inc., as part of work performed for the Nebraska Department of Agriculture under a grant from the Nebraska Emergency Management Agency.